Appendix C
Other Species at Risk

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Recovery actions for coho salmon have the potential to affect other species listed under the Federal Endangered Species Act of 1973, as amended (ESA) [16 USC section 1 *et seq*.] and under the California Endangered Species Act (CESA) [FGC §2050 *et seq*.]. Potential effects could range from beneficial to detrimental to the conservation of these species.

CONSTRAINTS ON RECOVERY ACTIONS

The presence of listed species may limit coho salmon recovery actions at a site. For example, vortex rock weirs are commonly used to improve pool development for juvenile coho salmon (Flosi et al. 1998), but these structures are not permitted in streams where California freshwater shrimp are present. The presence of other listed species may also increase the time and/or cost required to implement a coho salmon recovery action. For example, to avoid noise disturbance to nesting marbled murrelets, heavy equipment work is typically prohibited within known murrelet habitat until after September 15. This restricts the work window to conduct some projects requiring heavy equipment, and can cause significant delays. In turn, delays can increase costs such as equipment mobilization and may create problems for projects involving public funds, which are typically allocated for a set time period.

Coho salmon recovery actions are not expected to have long-term adverse impacts on other listed species. However, recovery actions may require consultation with appropriate agencies, and/or the issuance of incidental take authorizations and/or other permits.

The presence of listed species (including coho salmon) could also increase the time and cost of California Environmental Quality Act (CEQA) review required for State or local permits associated with coho salmon recovery. The CEQA mandatory findings of significance (CEQA Guidelines section 15065(a)) require an Environmental Impact Report (EIR) if an action has the potential to "...reduce the number or restrict the range of a rare or endangered plant or animal..." Under existing case law, the threshold for triggering this mandatory finding of significance is very low (San Bernardino Audubon Society v. Metropolitan Water District, 1999, 7 1Cal.App.4th 382). The additional time required for an EIR (as compared to a Negative Declaration (or a CEQA exemption) could significantly add to the time and cost required to implement a recovery action having the potential for take. The Department and other implementing public agencies undertaking recovery actions will have to assess on a case-by-case basis the potential of the proposed action to meaningfully reduce the number or restrict the range of other listed species when approving recovery projects.

Another potential complication could occur if State-designated "fully protected" species are present, as the Department is prohibited from authorizing any take of fully protected species, (See FGC §55 15, 5050, 35 1 1 and 4700). The Commission can, however, authorize take of fully protected species for necessary scientific research and many recovery projects may be susceptible to design so as to avoid the take of fully protected species.

OTHER AT-RISK SPECIES IN THE RANGE OF COHO SALMON

Below are brief descriptions of other at-risk species that should be considered when implementing the coho salmon Recovery Strategy. Individual listed plant species are not discussed in this Recovery Strategy, although they also must be considered when implementing coho salmon recovery actions. It has been the Department's practice for salmonid restoration grant projects to require rare plant surveys prior to implementing ground-disturbing actions and, if necessary, to modify projects to avoid any disturbance of rare plant colonies; in practice, conflicts between rare plants and salmonid habitat restoration actions have been infrequent and avoidance of such conflicts is relatively simple.

Trinity Bristle Snail *(Monadenia setosa)*

The Trinity bristle snail is listed as threatened under CESA and only occurs in the Trinity River HU This species typically occupies conifer and mixed conifer/hardwood stands with tree diameter greater than 11 inches at breast height and canopy cover greater than 60%. The snail prefers moist microhabitats where large woody debris is greater than 10 inches and is moderately decayed. Lichens and mosses on rocks and logs are typically present on occupied sites. Maple and alder tree species are often present, indicating a reliable moisture content on which the snails depend.

Increased large woody debris recruitment in riparian zones would benefit Trinity bristle snails. Areas of potential habitat within the range of the Trinity bristle snail should be surveyed according to published protocol prior to commencement of any coho salmon recovery activities. Occupied habitat will need to be identified and avoided. If a project would result in incidental take of Trinity bristle snail, the project would require incidental take authorization from the Department.

California Freshwater Shrimp *(Syncaris pacifica)*

The California freshwater shrimp is listed as endangered under both ESA and CESA. It is endemic to Marin, Sonoma, and Napa counties, where it occurs in low-gradient streams (< 1%) with moderate to heavy riparian vegetation. Freshwater shrimp are usually associated with pools 1 to 3 feet deep, especially those with stable undercut banks with exposed root systems and the top of the undercut below the water surface.

Protection and improvement of riparian habitat would increase vegetative cover required for protection from predators. Sediment control and placement of large woody debris would improve habitat quality for shrimp by increasing pool development and structural cover. Replacement of culverts with bridges or arch culverts would promote connectivity of shrimp habitat. Fish habitat structures that completely span a stream (including vortex rock weirs) must be avoided in shrimp habitat to avoid creating barriers to instream movement of shrimp. Any planning for in-water work in shrimp habitat should include surveys to determine if they are present. If they are present, the project will require take authorization from U.S. Fish and Wildlife Service (FWS) and the Department.

Lost River Sucker *(Delistes luxatus)*

The Lost River sucker is listed as endangered under both ESA and CESA, and is fully protected. Lost River suckers are found in the Lost River system and the Upper Klamath River watershed with a few uncertain sized populations in Copco and Iron Gate reservoirs. These populations are thought to be maintained by entrained fish in the Klamath hydropower project. The reduction of pesticides, fertilizers and other pollutants from entering the lake would increase viable habitat by decreasing the contaminants that start and/or cause the process of excessive eutrophication and anoxic water conditions. The improvement of water quality con-

ditions would benefit both Lost River suckers and coho salmon. Maintaining lake levels to benefit suckers may impact the flows needed for coho salmon downstream.

Shortnose Sucker *(Chasmistes brevirostris)*

The shortnose sucker is listed as endangered under both ESA and CESA and it is a State fully protected species. Shortnose suckers are know to occur in the Upper Klamath River watershed with undetermined populations in Copco and Iron Gate reservoirs and the most abundant populations in the Lost River system. The reduction of pesticides, fertilizers and other pollutants from entering Upper Klamath Lake would increase viable habitat by decreasing the contaminants that start or cause the process of excessive eutrophication and anoxic water conditions. The improvement of water quality conditions would benefit both shortnose suckers and coho salmon. Maintaining lake levels to benefit suckers may impact the flows needed for coho salmon downstream.

Tidewater Goby *(Eucyclogobius newberryi)*

The tidewater goby is listed as endangered under ESA. The tidewater goby's habitat consists of brackish shallow lagoons and lower freshwater stream reaches where the water is fairly still but not stagnant. They tend to be associated with muddy substrates (Jim Watkins pers. comm. 1/23/03).

In general, actions to restore coho salmon are not likely to impact tidewater goby, although efforts to protect and restore coho salmon nursery habitat in estuaries is likely to have a positive influence on the preservation of goby habitat; this includes such actions as re-establishment of functional estuaries and lagoons by the removal, or setback, of levees that confine the water course, and allowing for the reconnection of wetlands, sloughs, and the tidal influenced areas. Any planning for in-water work in goby habitat (such as placing LWD in estuaries) should include surveys to determine goby presence. If gobies are present, the project will require take authorization from FWS.

Green Sturgeon *(Acipenser medirostris)*

In January 2003, NOAA Fisheries determined that listing green sturgeon under the ESA was not warranted. However, because of uncertain population structure and status of the species, NOAA Fisheries is adding two distinct populations segments of green sturgeon (one north of the Eel River, the other south of the Eel River) to the agency's list of candidate species. Green sturgeon is presumed extant in the mainstem Klamath and Trinity rivers and possibly in the Eel River.

Development of cold-water flows would decrease the incidence of disease outbreak benefiting sturgeon and coho salmon in the Klamath, Trinity, and Eel River systems. Implementing a Hardy Phase II like flow regime in the Klamath River would give these fish greater access to the upper portion of the watershed for spawning. Other benefits include the control of upslope sedimentation through increased buffer areas and the reduction of human caused disturbances in unstable soil types, and decreased sediment input from existing roads through sediment control measures.

Steelhead *(Oncorhynchus mykiss)*

Steelhead in both Northern California and Central California Coastal ESUs often share the same habitat or reaches of streams with coho salmon, therefore both species would likely benefit from habitat improvements projects for either species. Projects that decrease the sediment input into the stream, provide cooler (more optimal) water temperatures, and sufficient flows for all life stages would benefit both of these species.

Chinook Salmon *(O. tshawytscha)* – California Coastal ESU

Chinook salmon generally spawn in larger streams than coho salmon. Many of these streams are either migration corridors or are in themselves used by coho salmon for spawning. Projects that decrease sediment input into streams, provide cooler (more optimal) water temperatures, and sufficient flows for all life stages would benefit both of these species.

Siskiyou Mountains Salamander *(Plethodon stormi)*

The Siskiyou Mountains salamander is a lungless, completely terrestrial salamander listed as threatened under CESA. This species occurs in the Applegate HU and Seiad Valley HSA, in Siskiyou County. Suitable habitat includes rock outcrops, talus (rock on rock substrates), and forested rocky soils. Areas of potential habitat within the range of the Siskiyou Mountains salamander should be surveyed according to published protocol prior to commencement of any coho salmon recovery activities. Occupied habitat will need to be identified and avoided. If the project would result in incidental take of Siskiyou Mountain salamander, the project would require incidental take authorization from the Department.

California Tiger Salamander *(Ambystoma californiense)*

Recommendations and actions associated with recovery of coho salmon in California are not expected to have adverse effects on California tiger salamander populations, because potential actions are not expected to overlap with their habitat.

California Red-legged Frog *(Rana aurora draytonii)*

The California red-legged frog is listed as threatened under ESA. California red-legged frogs occur, within the range of the coho salmon, from Point Reyes south and inland to the Sacramento Valley. They are found primarily in the wetlands and streams in the coastal drainages of central California and there is a significant likelihood of co-occurring with coho salmon in the southern part of their range. The frogs are associated with dense riparian vegetation closely associated with deep (>2 feet) still or slow moving water, and may aestivate within 300 feet of a riparian area.

Although protection and improvement of habitat for coho salmon will sometimes improve habitat for California red-legged frogs, some activities to protect and restore coho salmon habitat (for example projects requiring heavy equipment) have the potential to take frogs. Any planning for restoration actions in California red-legged frog habitat should include surveys for the species. If the project would result in take of California red-legged frogs, the project would require incidental take authorization from FWS.

San Francisco Garter Snake *(Thamnophis sirtalis tetrataenia)*

The San Francisco garter snake (SFGS) is listed as endangered under both ESA and CESA, and has State fully protected status. SFGS presently range from San Mateo County to northern Santa Cruz County, however known populations are limited in extent. SFGS may co-occur with coho salmon in San Gregorio and La Honda creeks, Pescadero Marsh and Creek, Butano, Gazos, Old Woman, Whitehouse, and Waddell creeks.

Although protection and improvement of habitat for coho salmon will sometimes improve habitat for SFGS and their preferred prey (California red-legged frogs), some activities to protect and restore coho salmon habitat have the potential to take SFGS. For example, grading of hill slopes to reduce stream sedimentation attributable to gullying is an important activity for coho salmon recovery in coastal San Mateo County but can crush SFGS aestivating in rodent burrows.

Because of the potential for take of SFGS, planning for coho salmon habitat restoration activities within suitable habitat for the snake in San Mateo and Santa Cruz counties should

include surveys for SFGS by a permitted biologist. If SFGS are identified at a project site, measures to avoid impacts would include (at least) that an experienced biologist, approved by the Department and named on a valid 10(a)(1)(A) Federal Scientific Collection Permit issued by USFWS for handling SFGS, be present during all project activities within areas of SFGS habitat. If necessary, habitat work could be scheduled to occur in September and October to avoid impacts to hibernating snakes and snakes concentrated along stream corridors feeding and giving birth to live young. Planning for coho salmon recovery actions within the range of the SFGS will need to consider the time and budget required for permitting and coordination. Federal permitting for coho salmon recovery actions in SFGS habitat could be facilitated by development of a programmatic FWS Section 7 consultation.

Greater Sandhill Crane *(Grus canadensis tabida)*

The greater sandhill crane is listed as threatened under CESA and has State fully protected status. This species breeds in northeastern California, the western most extent being Scott Valley (Siskiyou County). This species relies on permanently flooded wetlands for nesting with nearby flood irrigated pasture to provide food for newly hatched colts. Impacts to nesting or brooding birds from project activities such as building riparian fencing adjacent to crane breeding habitat would have to be evaluated on a case-by-case basis. However, impacts can usually be mitigated and take avoided by avoiding disturbance during the critical nesting period (March 1 to August 1) or maintaining a distance of 0.5 mile from the potential breeding habitat. The Department is developing a recovery plan for this species.

California Brown Pelican *(Pelecanus occidentalis californicus*)

The California brown pelican is listed as endangered under both ESA and CESA and has State fully protected status. In Northern California, the Brown Pelican inhabits the coastline and estuaries mainly in the late summer and fall (June to November) and is considered uncommon to rare from December to May. Actions to restore coho salmon are not likely to impact this species, although efforts to protect and restore estuarine habitat may have a positive influence on this species. Most breeding occurs in Southern California (Channel Islands), outside of the range of coho salmon.

Western Yellow-billed Cuckoo *(Coccyzus americanus occidentalis)*

The western yellow-billed cuckoo is listed as endangered under CESA. The most recent information indicates nesting pairs have been found on the lower Eel River (near Fortuna). Historically, there are scattered records around Humboldt Bay and south along the coast, but breeding status was undetermined. Cuckoo breeding habitat consists of riparian areas with a cottonwood and/or willow component. Alders have been found to be component of the habitat utilized by the birds found on the Eel River. They breed later than most migrant species, beginning in June and continuing through September. Projects that would increase both the quantity and quality of riparian vegetation would benefit this species. Projects that would take place during the critical breeding period (June through September) would require surveys to determine presence. If the project would result in take of western yellow-billed cuckoo, incidental take authorization from the Department would be required.

Willow Flycatcher *(Empidonax traillii)*

The willow flycatcher is listed as endangered under CESA and is found within the range of coho salmon. Protection and improvement of riparian habitat associated with coho salmon recovery actions will promote potential willow flycatcher habitat. However, care must be taken to avoid disturbing breeding sites of the flycatcher. Impacts to breeding sites can be mitigated

by avoiding heavy equipment work and harvest of willow branches for riparian revegetation within 0.25 miles of any site with known or potential habitat for willow flycatcher during the breeding season. By limiting the harvest of willow for revegetation to no more than one-third of any willow plant annually and taking care not trample or over harvest the willow sources, the long-term integrity of willow flycatcher habitat can be protected. If the project would result in take of willow flycatchers, incidental take authorization from the Department would be required.

Northern Spotted Owl *(Strix occidentalis caurina)*

The northern spotted owl is listed as threatened under ESA. Activities to protect and restore coho salmon habitat should not alter habitat for the owls, however the potential exists for project-related noise (e.g., heavy equipment required for projects such as culvert removal or placement of large woody debris) to disturb nesting birds. Adverse impacts can be avoided by limiting heavy equipment work within 0.25 miles of spotted owl habitat to the period of August 1 to October 31. If the project would result in take of northern spotted owls, incidental take authorization from FWS and would be required.

Marbled Murrelet *(Brachyramphus marmoratus marmoratus)*

The marbled murrelet is listed as endangered under CESA and threatened under ESA. Activities to protect and restore coho salmon habitat should not alter habitat for marbled murrelets, however the potential exists for project-related noise (e.g., heavy equipment required for projects such as culvert removal or placement of large woody debris) to disturb nesting birds. Adverse impacts can be avoided by limiting heavy equipment work within 0.25 miles of marbled murrelet habitat to the period of September 15 to October 31. If the project would result in take of marbled murrelets, incidental take authorization from FWS and the Department would be required.

Western Snowy Plover *(Charadrius alexandrinus nivosus)*

The western snowy plover is listed as threatened under ESA. Snowy plovers have mainly been described as nesting adjacent to tidal waters, however some individuals may breed on gravel bars in coastal rivers; in particular, nesting snowy plovers have been identified in the Eel River watershed up to 50 miles inland. Activities to protect and restore coho salmon habitat should not alter habitat for snowy plover, however heavy equipment work in areas with extensive gravel bars relatively near the coast has the potential to disturb or injure nesting snowy plovers. Adverse impacts can be avoided by limiting heavy equipment work within 0.25 miles of snowy plover nesting habitat to the period October 1 to October 31. If the project would result in take of snowy plovers, incidental take authorization from FWS would be required.

Bank Swallow *(Riparia riparia)*

The bank swallow is listed as threatened under CESA. Presently the only known breeding population of bank swallows in the coho salmon range is along the Scott River. To avoid adverse impacts to bank swallows, any potential breeding habitat should be surveyed during the breeding season (March 1 to July 31) to determine swallow presence. Any modification of bank swallow nesting habitat should be avoided. If the project would result in take of bank swallows, incidental take authorization from the Department would be required.

Bald Eagle *(Haliaeetus leucocephalus)*

The bald eagle is listed as endangered under CESA and threatened under ESA. The bald eagle is also protected under Fish and Game Code section 3503.5, which prohibits take. Recovery of coho salmon will increase winter foraging opportunities for bald eagles. However, the potential exists for the noise from heavy equipment required for projects such as culvert removal or

placement of large woody debris to disturb nesting birds. Such impacts can be avoided by limiting heavy equipment work within 0.25 miles of any bald eagle nests to the period of September 1 to October 31. To prevent possible impacts of turbidity on bald eagle foraging, necessary precautions must be used to avoid significant increases in turbidity during any construction, and erosion control measures must be in place before the first significant fall rains.

California Clapper Rail *(Rallus longirostris obsoletus)*

The California clapper rail is listed as endangered under ESA and CESA, and has State fully protected status. California clapper rails are found in tidal marshes around San Francisco Bay. In general, actions to restore coho salmon are not likely to impact this species, although efforts to protect and restore coho salmon nursery habitat in estuaries may have a positive influence on the preservation of marsh habitat for this species.

California Black Rail *(Laterallus jamaicensis coturniculus)*

The California black rail is listed as threatened under CESA and has State fully protected status. The California black rail is more widely distributed than the California clapper rail, from San Francisco Bay south and in both brackish and freshwater marsh habitat. In general, actions to restore coho salmon are not likely to impact this species, although efforts to protect and restore coho salmon nursery habitat in estuaries is likely to have a positive influence on the preservation of marsh habitat for this species.

Point Arena Mountain Beaver *(Aplodontia rufa nigra)*

The Point Arena mountain beaver is listed as endangered under ESA. Point Arena mountain beavers have been identified in the Alder Creek, Brush Creek, and Garcia River HSAs, in an area extending roughly five miles south and eight miles north of Point Arena, and up to approximately five miles inland from the coast.

Aspects of mountain beaver habitat are consistent with coho salmon habitat (such as cool climate, lush vegetation, stable stream banks), however some common habitat restoration methods (such as tree planting) may not be compatible with the herbaceous and small woody vegetation associated with mountain beaver habitat. In addition, special care is needed when working (or walking) in mountain beaver habitat to avoid collapsing burrows. Disturbance during the breeding season (December 15 to April 15) or juvenile dispersal season (December 15 to June 15) should be avoided in the course of adhering to criteria for protection of salmonids (i.e., no instream work until after July 1). Because of the potential for impacts to Point Arena mountain beaver, planning for coho salmon habitat restoration activities within the riparian zone in the Alder Creek, Brush Creek, and Garcia River HSAs should include mountain beaver surveys. If Point Arena mountain beaver are present the project will require take authorization from FWS.

Salt-marsh Harvest Mouse *(Reithrodontomys raviventris)*

The salt marsh harvest mouse is listed as endangered under ESA and CESA, and has State fully protected status; they are found in tidal marshes around San Francisco Bay. In general, actions to restore coho salmon are not likely to impact this species, although efforts to protect and restore coho salmon nursery habitat in estuaries may have a positive influence on the preservation of marsh habitat.